

# Types of Animal Behavior

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## CONCEPT

## 1

# Types of Animal Behavior

## Lesson Objectives

- List ways that animals communicate.
- Describe social behavior in animals.
- Explain the purpose of mating behavior.
- Describe how animals defend their territory.
- Identify animal behaviors that occur in cycles.

## Check Your Understanding

- What is an animal?
- Give examples of a wide variety of animals.
- List some "behaviors" animals, such as spiders and rabbits, have in common.

## Introduction

What is reproduction? (Reproduction is the production of offspring. Animals reproduce asexually or sexually. Reproduction is related to fitness because fitness depends in part on the ability to reproduce. Do all animals talk to each other? Probably not, but many do communicate. Like human beings, many other animals live together in groups. Some insects, including ants and bees, are well known for living in groups. In order for animals to live together in groups, they must be able to communicate with each other. Animal communication, like most other animal behaviors, increases fitness. Fitness is the ability to survive and have offspring. Communication increases fitness by helping animals find food, defend themselves from predators, mate, and care for offspring.

## Communication

What does the word *communication* make you think of? Talking on a cell phone? Texting? Writing? Those are just a few of the ways that human beings communicate. Most other animals also communicate. **Communication** is any way that animals share information, and they do this in many different ways.

## Ways That Animals Communicate

Some animals communicate with sound. Most birds communicate this way. Birds use different calls to warn other birds of danger or to tell them to flock together. Many other animals also use sound to communicate. For example, monkeys use warning cries to tell other monkeys in their troop that a predator is near. Frogs croak to attract female frogs as mates. Gibbons use calls to tell other gibbons to stay away from their area.

Another way some animals communicate is with sight. By moving in certain ways or “making faces,” they show other animals what they mean. Most primates communicate in this way. For example, a male chimpanzee may raise his arms and stare at another male chimpanzee. This warns the other chimpanzee to keep his distance. The chimpanzee in **Figure 1.1** may look like he is smiling. However, he is really showing fear. He is communicating to other chimpanzees that he will not challenge them. Look at the peacock in **Figure 1.2**. Why is he raising his beautiful tail feathers? He is also communicating. He is showing females of his species that he would be a good mate.

All of the animals pictured here are busy doing something important. Read about what each animal is doing then think about why the animal is behaving that way. These are just a few of the many ways that animals behave.



**FIGURE 1.1**

This chimpanzee is communicating with his face. His expression is called a “fear grin.” It tells other chimpanzees that he is not a threat.

Some animals communicate with scent. They secrete chemicals that other animals of their species can smell or detect in some other way. Ants secrete many different chemicals. Other ants detect the chemicals with their antennae. This explains how ants are able to work together. The different chemicals that ants secrete have different meanings. Some of the chemicals signal all the ants in a group to come together. Other chemicals warn of danger. Still other chemicals mark trails to food sources. When an ant finds food, it marks the trail back to the nest by secreting a chemical on the ground. Other ants follow the chemical trail to the food.

Many other animals also use chemicals to communicate. You have probably seen male dogs raise their leg to urinate on a fire hydrant or other object. Did you know that the dogs were communicating? They were marking their area with a chemical in their urine. Other dogs can smell the chemical. The scent of the chemical tells other dogs to stay away.

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## Human Communication

Like other animals, humans communicate with one another. They mainly use sound and sight to share information. The most important way that humans communicate is with language. **Language** is the use of symbols to communicate. In human languages, the symbols are words. They stand for many different things. Words stand for things, people, actions, feelings, or ideas. Think of several common words. What does each word stand for?

**FIGURE 1.2**

This peacock is using his tail feathers to communicate. What is he “saying”?

Another important way that humans communicate is with facial expressions. Look at the faces of the young children in **Figure 1.3**. Can you tell from their faces what the children are feeling? Humans also use gestures to communicate. What are people communicating when they shrug their shoulders? When they shake their head? These are just a few examples of the ways that humans share information without using words.

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## Social Behavior

Why is animal communication important? Without it, animals would not be able to live together in groups. Animals that live in groups with other members of their species are called **social animals**. Social animals include many species of insects, birds, and mammals. Specific examples of social animals are ants, bees, crows, wolves, and humans. To live together with one another, these animals must be able to share information.



**FIGURE 1.3**

What does this girl's face say about how she is feeling?

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## Highly Social Animals

Some species of animals are very social. In these species, members of the group depend completely on one another. Different animals within the group have different jobs. Therefore, group members must work together for the good of all. Most species of ants and bees are highly social animals.

Ants, like those in **Figure 1.4**, live together in large groups called colonies. A colony may have millions of ants. All of the ants in the colony work together as a single unit. Each ant has a specific job. Most of the ants are workers. Their job is to build and repair the colony's nest. Worker ants also leave the nest to find food for themselves and other colony members. The workers care for the young, as well. Other ants in the colony are soldiers. They defend the colony against predators. Each colony also has a queen. Her only job is to lay eggs. She may lay millions of eggs each month. A few ants in the colony are called drones. They are the only male ants in the colony. Their job is to mate with the queen.

Honeybees and bumblebees also live in colonies. A colony of honeybees is shown in **Figure 1.5**. Each bee in the colony has a particular job. Most of the bees are workers. Young worker bees clean the colony's hive and feed the young. Older worker bees build the waxy honey comb or guard the hive. The oldest workers leave the hive to find food. Each colony usually has one queen that lays eggs. The colony also has a small number of male drones. They

**FIGURE 1.4**

The ants in this picture belong to the same colony. They have left the colony's nest to search for food.

mate with the queen.

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## Cooperation

Ants, bees, and other social animals must cooperate. **Cooperation** means working together with others. Members of the group may cooperate by sharing food. They may also cooperate by defending each other. Look at the ants in **Figure 1.6**. They show clearly why cooperation is important. A single ant would not be able to carry this large insect back to the nest to feed the other ants. With cooperation, the job is easy.

Animals in many other species cooperate. For example, lions live in groups called prides. A lion pride is shown in **Figure 1.7**. All the lions in the pride cooperate. Male lions work together to defend the other lions in the pride. Female lions work together to hunt. Then they share the meat with other pride members.

Meerkats are small mammals that live in Africa. They also live in groups and cooperate with one another. For example, young female meerkats act as babysitters. They take care of the baby meerkats while their parents are away looking for food.

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## Mating Behavior

Some of the most important animal behaviors involve mating. **Mating** is the pairing of an adult male and female to produce young. Adults that are most successful at attracting a mate are most likely to have offspring. Traits that help animals attract a mate and have offspring increase their fitness. If the traits are controlled by genes, they will become more common in the species through natural selection.

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## Courtship Behaviors

In many species, females choose the male they will mate with. For their part, males try to be chosen as mates. They show females that they would be a better mate than the other males. To be chosen as a mate, males may perform

**FIGURE 1.5**

All the honeybees in this colony work together. Each bee has a certain job to perform. The bees are gathered together to fly to a new home. How do you think they knew it was time to gather together?

**courtship behaviors.** These are special behaviors that help attract a mate. Male courtship behaviors get the attention of females and show off a male's traits. Different species have different courtship behaviors. Remember the peacock raising his tail feathers in Figure 1b? This is an example of courtship behavior. The peacock is trying to impress females of his species with his beautiful feathers.

Another example of courtship behavior in birds is shown in **Figure 1.8**. This bird is called a blue-footed booby. He is doing a dance to attract a female for mating. During the dance, he spreads out his wings and stamps his feet on the ground. You can watch a video of a blue-footed booby doing his courtship dance at:

[http://www.travelpod.com/travel-photo/harryandnorah/the\\_other\\_way/1199840760/blue-footed-booby-courting-dance.avi/tpod.html](http://www.travelpod.com/travel-photo/harryandnorah/the_other_way/1199840760/blue-footed-booby-courting-dance.avi/tpod.html).

Courtship behaviors occur in many other species. For example, males in some species of whales have special mating songs to attract females as mates. Frogs croak for the same reason. Male deer clash antlers to court females. Male jumping spiders jump from side to side to attract mates. To see a video of a jumping spider courting a mate, go to:

<http://video.aol.com/video-detail/courtship-and-mating-of-the-jumping-spider-lyssomanes-viridis-araneae-salticidae/2837652909>.



**FIGURE 1.6**

These ants are cooperating. By working together, they are able to move this much larger insect prey back to their nest. At the nest, they will share the insect with other ants that do not leave the nest.

**FIGURE 1.7**

Members of this lion pride work together. Males cooperate by defending the pride. Females cooperate by hunting and sharing the food.

Courtship behaviors are one type of display behavior. A **display behavior** is a fixed set of actions that carries a specific message. Although many display behaviors are used to attract mates, some display behaviors have other purposes. For example, display behaviors may be used to warn other animals to stay away, as you will read below.

## Caring for the Young

In most species of birds and mammals, one or both parents care for their offspring. Caring for the young may include making a nest or other shelter. It may also include feeding the young and protecting them from predators. Caring for offspring increases their chances of surviving. When parents help their young survive, they increase their own fitness.

Birds called killdeer have an interesting way to protect their chicks. When a predator gets too close to her nest, a mother killdeer pretends to have a broken wing. The mother walks away from the nest holding her wing as though it is injured. This is what the killdeer in **Figure 1.9** is doing. The predator thinks she is injured and will be easy prey.



**FIGURE 1.8**

This blue-footed booby is a species of sea bird. The male pictured here is doing a courtship “dance.” He is trying to attract a female for mating.

The mother leads the predator away from the nest and then flies away.



**FIGURE 1.9**

This mother killdeer is pretending she has a broken wing. She is trying to attract a predator’s attention in order to protect her chicks. This behavior puts her at risk of harm. How can it increase her fitness?

In most species of mammals, parents also teach their offspring important skills. For example, meerkat parents teach their pups how to eat scorpions without being stung. A scorpion sting can be deadly, so this is a very important skill. Teaching the young important skills makes it more likely that they will survive.

## Defending Territory

Some species of animals are territorial. This means that they defend their area. The area they defend usually contains their nest and enough food for themselves and their offspring. A species is more likely to be territorial if there is not very much food in their area.



Animals generally do not defend their territory by fighting. Instead, they are more likely to use display behavior. The behavior tells other animals to stay away. It gets the message across without the need for fighting. Display behavior is generally safer and uses less energy than fighting.

Male gorillas use display behavior to defend their territory. They pound on their chests and thump the ground with their hands to warn other male gorillas to keep away from their area. The robin in **Figure 1.10** is also using display behavior to defend his territory. He is displaying his red breast to warn other robins to stay away.



**FIGURE 1.10**

The red breast of this male robin is easy to see. The robin displays his bright red chest to defend his territory. It warns other robins to keep out of his area.

Some animals deposit chemicals to mark the boundary of their territory. This is why dogs urinate on fire hydrants and other objects. Cats may also mark their territory by depositing chemicals. They have scent glands in their face. They deposit chemicals by rubbing their face against objects.

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## Cycles of Behavior

Many animal behaviors change in a regular way. They go through cycles. Some cycles of behavior repeat each year. Other cycles of behavior repeat every day.

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### Yearly Cycles

An example of a behavior with a yearly cycle is **hibernation**. Hibernation is a state in which an animal's body processes are slower than usual and its body temperature falls. An animal uses less energy than usual during hibernation. This helps the animal survive during a time of year when food is scarce. Hibernation may last for weeks or months. Animals that hibernate include species of bats, squirrels, and snakes.

Most people think that bears hibernate. In fact, bears do not go into true hibernation. In the winter, they go into a deep sleep. However, their body processes do not slow down very much. Their body temperature also remains about the same as usual. Bears can be awakened easily from their winter sleep.

Another example of a behavior with a yearly cycle is **migration**. Migration is the movement of animals from one place to another. Migration is an innate behavior that is triggered by changes in the environment. For example, animals may migrate when the days get shorter in the fall. Migration is most common in birds, fish, and insects. In the Northern Hemisphere, many species of birds, including robins and geese, travel south for the winter. They migrate to areas where it is warmer and where there is more food. They return north in the spring. A flock of migrating geese is shown in **Figure 1.11**.



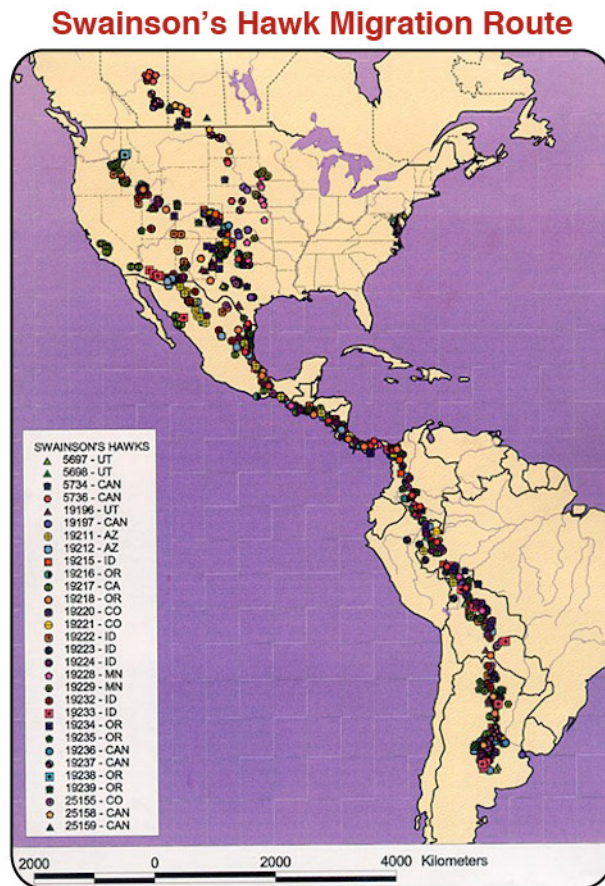
**FIGURE 1.11**

These geese are flying south for the winter. Flocks of geese migrate in V-shaped formations.

Some animals migrate very long distances. The map in **Figure 1.12** shows the migration route of a species of hawk called Swainson's hawk. About how many kilometers do the hawks travel from start to finish? Are you surprised that birds migrate that far? Some species of birds migrate even farther.

Birds and other migrating animals follow the same routes each year. How do they know where to go? It depends on the species. Some animals follow landmarks, such as rivers or coastlines. Other animals are guided by the position of the sun, the usual direction of the wind, or other clues in the environment.



**FIGURE 1.12**

The migration route of Swainson's hawk starts in North America and ends in South America. Scientists learned their migration route by attaching tiny tracking devices to the birds. The birds were then tracked by satellite. On the migration south, the hawks travel about 8,000 kilometers from start to finish.

## Daily Cycles

Many animal behaviors change at certain times of day, day after day. For example, most animals go to sleep when the sun sets and wake up when the sun rises. Animals that are active during the daytime are called diurnal. Some animals do the opposite. They sleep all day and are active during the night. These animals are called nocturnal. Animals may eat and drink at certain times of day, as well. Humans have daily cycles of behavior, too. Most people start to get sleepy after dark and have a hard time sleeping when it is light outside. Daily cycles of behavior are called **circadian rhythms**.

In many species, including humans, circadian rhythms are controlled by a tiny structure called the **biological clock**. This structure is located in a gland at the base of the brain. The biological clock sends signals to the body. The signals cause regular changes in behavior and body processes. The amount of light entering the eyes controls the biological clock. That's why the clock causes changes that repeat every 24 hours.

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## Lesson Summary

- Communication is any way that animals share information.
- Social animals live together in groups and cooperate with one another.
- Some of the most important animal behaviors involve attracting mates and caring for offspring.
- Some animals defend the area where they live from other animals.
- Many animal behaviors occur in cycles that repeat yearly or daily.

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## Review Questions

1. List two ways that animals communicate.
2. Describe how ants in a colony cooperate.
3. What is courtship behavior?
4. Why do male dogs urinate on fire hydrants and other objects?
5. Give an example of a circadian rhythm.
6. How do ants use chemicals to communicate?
7. Explain how courtship behaviors could evolve.
8. How do adult animals increase their own fitness by teaching skills to their young?
9. What is the advantage of animals using display behavior instead of fighting to defend their territory?
10. What is migration, and why do animals migrate?

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## Further Reading / Supplemental Links

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- [http://news.nationalgeographic.com/news/2003/07/0709\\_030709\\_socialanimals.html](http://news.nationalgeographic.com/news/2003/07/0709_030709_socialanimals.html)
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- <http://en.wikibooks.org>

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## Vocabulary

**biological clock** Tiny structure in the brain that controls circadian rhythms.

**circadian rhythms** An organism's daily cycles of behavior.

**communication** Any way that animals share information.

**cooperation** Working together with others for the common good.

**courtship behaviors** Special behaviors that help attract a mate.

**display behavior** Fixed set of actions that carries a specific message.

**hibernation** State in which an animal's body processes are slower than usual.

**language** Use of symbols (or sounds) to communicate.

**mating** Pairing of an adult male and female to produce young.

**migration** Movement of animals from one place to another; often seasonal.

**social animals** Animals that live in groups with other members of their species.

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## Points to Consider

- The biological clock located just below the human brain controls behaviors such as the sleep-wake cycle.
- The brain is part of the nervous system. What other body system are found in humans?
- Which body system includes the bones? Which system includes the muscles? What do bones and muscles do?